

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION
USING AN APPLICATION DATA SHEET (37 CFR 1.76)****Title of Invention****COMPOSITIONS AND METHODS FOR DIAGNOSIS AND
THERAPY OF MEDICAL CONDITIONS INVOLVING
ANGIOGENESIS**

As the below named inventors, we declare that:

This declaration is directed to:

- ☐ The attached application, or
☒ Application No. 10/601,080, filed on June 19, 2003
☐ as amended on _____ (if applicable);

We believe that we are the original and first inventors of the subject matter which is claimed and for which a patent is sought;

We have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

We acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the National or PCT International filing date of the continuation-in-part application.

All statements made herein of our own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF INVENTORSInventor one: John L. MAGNANICitizen of: USASignature: *John L. Magnani*Date: Dec. 8, 2003Inventor two: John T. PATTON, Jr.Citizen of: USASignature: *John T. Patton, Jr.*Date: Dec. 8, 2003

Inventor three: _____

Citizen of: _____

Signature: _____

Date: _____

Inventor four: _____

Citizen of: _____

Signature: _____

Date: _____

☐ Additional inventors are being named on _____ additional form(s) attached hereto.

MillicentS/424999

**ELECTION AND POWER OF
ATTORNEY and
CORRESPONDENCE ADDRESS
INDICATION FORM**

| | |
|-------------------------------|--|
| Application Number | 10/601,080 |
| Filing Date | June 19, 2003 |
| First Named Inventor | J hn L. Magnani |
| Title | COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL CONDITIONS INVOLVING ANGIOGENESIS |
| Art Unit | 1645 |
| Examiner Name | |
| Attorney Docket Number | 400068.413 |

I hereby appoint:

☒ Practitioners at Seed IP Law Group PLLC, Customer Number: **00500**
OR
☐ Practitioner(s) named below:

| Name | Registration Number |
|------|---------------------|
| | |
| | |

as my attorneys or agents to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please recognize or change the correspondence address for the above-identified application to:

☒ The above-mentioned Customer Number.
OR
☐ The address associated with Customer Number:
OR

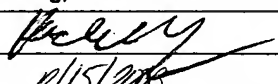
| | | | | | |
|---|----------------|-------|----------------|-----|--|
| <input type="checkbox"/> Firm or Individual Name | | | | | |
| Address | | | | | |
| Address | | | | | |
| City | | State | | ZIP | |
| Country | | | | | |
| Telephone | (206) 622-4900 | Fax | (206) 682-6031 | | |

GlycoMimetics, Inc. is the:

☐ Applicant/Inventor.

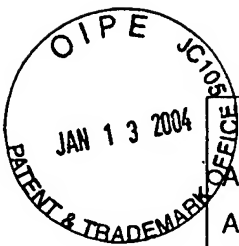
☒ Assignee of record of the entire interest. See 37 CFR 3.71.

Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
☒ As assignee of record of the entire interest, GlycoMimetics Inc. hereby elects under 37 C.F.R. § 3.71, to prosecute the application to the exclusion of the inventors.
SIGNATURE of Representative of Assignee of Record

| | |
|------------------|---|
| Name | Rachel K. King, Chief Executive Officer, GlycoMimetics, Inc. |
| Signature |  |
| Date | 2/15/2005 |

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of one form is submitted.

**STATEMENT UNDER 37 CFR 3.73(b)**Applicants: John L. Magnani and John T. Patton, Jr.Application No.: 10/601,080 Filed: June 19, 2003Entitled: COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL CONDITIONS INVOLVING ANGIOGENESISGlycoMimetics, Inc.

(Name of Assignee)

a

corporation

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest.
The extent (by percentage) of its ownership interest is _____%

in the patent application/patent identified above by virtue of either:

- A. ☐ An assignment from the inventors of the patent application identified above.
The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: John T. Patton, Jr. To: GlycoTech Corporation

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: GlycoTech Corporation To: GlycoMimetics, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: John L. Magnani To: GlycoMimetics, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

- ☒ Copies of assignments or other documents in the chain of title noted in B above are attached.

[NOTE: A separate copy (i.e., the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.8]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

12/15/2003
Date

301.738.1166

Telephone Number

Rachel K. King

Typed or printed name

[Signature]
Signature

Chief Executive Officer

Title

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



Applicants: John L. Magnani and John T. Patton, Jr.
 Attorney's Docket No.: 400068.413
 Application No.: 10/601,080
 Filed: June 19, 2003
 For: COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY
OF MEDICAL CONDITIONS INVOLVING ANGIOGENESIS

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 C.F.R. §§ 1.9(f) AND 1.27(c)) -- SMALL BUSINESS CONCERN

I declare that I am:

- ☐ the owner of the small business concern identified below.
☒ an official of the small business concern empowered to act on behalf
 of the concern identified below.

NAME OF CONCERN: GlycoMimetics, Inc.
 ADDRESS OF CONCERN: 14915 Broschart Road, Suite 200
Rockville, Maryland 20850

I declare that the above-identified small business concern qualifies as a small business concern as defined in 13 C.F.R. §§ 121.3-18 and reproduced in 37 C.F.R. § 1.9(d) for purposes of paying reduced fees under 35 U.S.C. §§ 41(a) and 41(b) in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I declare that rights under contract or law have been conveyed to and remain with the small business concern with regard to the invention entitled:

COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL
CONDITIONS INVOLVING ANGIOGENESIS

by inventors: John L. Magnani and John T. Patton, Jr.
 as described in:

- ☐ the specification filed herewith.
☒ Application No. 10/601,080, filed June 19, 2003.
☐ Patent No. _____, issued _____.

If the rights held by the small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the

invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 C.F.R. § 1.9(c) or by any concern which would not qualify as a small business concern under 37 C.F.R. § 1.9(d) or a nonprofit organization under 37 C.F.R. § 1.9(e).*

*NOTE: Separate verified statements are required from each named person, concern and organization having rights to the invention averring to his/its status as a small entity. (37 C.F.R. § 1.27)

FULL NAME _____

ADDRESS _____

- ☐ individual
☐ small business concern
☐ nonprofit organization

FULL NAME _____

ADDRESS _____

- ☐ individual
☐ small business concern
☐ nonprofit organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earlier of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. § 1.28(b))

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Rachel K. King

TITLE OF PERSON OTHER THAN OWNER: Chief Executive Officer

ADDRESS OF PERSON SIGNING: 14915 Broschart Road, Suite 200

Rockville, MD 20850

SIGNATURE: 

DATE: 12/15/03

ASSIGNMENT

WHEREAS, GlycoTech Corporation (hereinafter referred to as ASSIGNOR), a corporation of the State of Delaware having a place of business at 14915 Broschart Road, Suite 200, Rockville, MD 20850, is a joint owner, along with John L. Magnani, of an invention entitled **"COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL CONDITIONS INVOLVING ANGIOGENESIS"** as described and claimed in the specification for which an application for United States letters patent was filed on June 19, 2003, and assigned Application No. 10/601,080; and in the specification for which an International Application was filed on June 19, 2003 and assigned Application No. PCT/US03/19429; which applications claim the benefit of U.S. Provisional Application No. 60/393,577, filed on July 03, 2002;

WHEREAS, GlycoMimetics, Inc. (hereinafter referred to as ASSIGNEE), a corporation of the State of Delaware having a place of business at 14915 Broschart Road, Suite 200, Rockville, MD 20850, is desirous of acquiring ASSIGNOR'S entire right, title and interest in and to said letters patent;

NOW, THEREFORE, in exchange for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby sells, assigns and transfers unto said ASSIGNEE its entire right, title and interest in and to said invention, said application and any and all letters patent which may be granted for said invention in the United States of America and its territorial possessions and in any and all foreign countries, and in any and all divisions, reissues and continuations thereof, including the right to file foreign applications directly in the name of ASSIGNEE and to claim priority rights deriving from said United States application to which said foreign applications are entitled by virtue of international convention, treaty or otherwise, said invention, application and all letters patent on said invention to be held and enjoyed by ASSIGNEE and its successors and assigns for their use and benefit and of their successors and assigns as fully and entirely as the same would have been held and enjoyed by ASSIGNOR had this assignment, transfer and sale not been made. ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue all letters patent on said invention to ASSIGNEE. ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of applications for

United States and foreign letters patent on said invention, for litigation regarding said letters patent, or for the purpose of protecting title to said invention or letters patent therefor.

GLYCOTECH CORPORATION

Dec. 9, 2003
Date _____
State of Maryland)
County of Montgomery) ss.
John L. Magnani _____

I certify that I know or have satisfactory evidence that John L. Magnani is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument, and acknowledged it as the President & CEO of GlycoTech Corporation to be the free and voluntary act of said corporation for the uses and purposes mentioned in the instrument.

Dated December 9, 2003
Signature of Notary Public Carol L. Culwell
Printed Name Carol L. Culwell
My appointment expires June 1, 2005

ASSIGNMENT

WHEREAS, I, **John T. Patton Jr.**, having a mailing address of **18932 Marsh Hawk Lane, Gaithersburg, Maryland 20879** (hereinafter referred to as ASSIGNOR), am joint inventor, along with John L. Magnani, of an invention entitled **"COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL CONDITIONS INVOLVING ANGIOGENESIS"** as described and claimed in the specification for which an application for United States letters patent was filed on June 19, 2003, and assigned Application No. 10/601,080; and in the specification for which an International Application was filed on June 19, 2003 and assigned Application No. PCT/US03/19429; which applications claim the benefit of U.S. Provisional Application No. 60/393,577, filed on July 03, 2002;

WHEREAS, GlycoTech Corporation (hereinafter referred to as ASSIGNEE), a corporation of the State of Delaware having a place of business at 14915 Broschart Road, Suite 200, Rockville, Maryland 20850 is desirous of acquiring ASSIGNOR'S entire right, title and interest in and to the invention and in and to any letters patent that may be granted therefor in the United States and in any and all foreign countries;

NOW, THEREFORE, in exchange for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby sells, assigns and transfers unto said ASSIGNEE his entire right, title and interest in and to said invention, said application and any and all letters patent which may be granted for said invention in the United States of America and its territorial possessions and in any and all foreign countries, and in any and all divisions, reissues and continuations thereof, including the right to file foreign applications directly in the name of ASSIGNEE and to claim priority rights deriving from said United States application to which said foreign applications are entitled by virtue of international convention, treaty or otherwise, said invention, application and all letters patent on said invention to be held and enjoyed by ASSIGNEE and its successors and assigns for their use and benefit and of their successors and assigns as fully and entirely as the same would have been held and enjoyed by ASSIGNOR had this assignment, transfer and sale not been made. ASSIGNOR hereby

authorizes and requests the Commissioner of Patents and Trademarks to issue all letters patent on said invention to ASSIGNEE. ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of applications for United States and foreign letters patent on said invention, for litigation regarding said letters patent, or for the purpose of protecting title to said invention or letters patent therefor.

12/8/2003
Date

John T. Patton, Jr.
John T. Patton, Jr.

State of Massachusetts)
County of Montgomery)

ss.

I certify that I know or have satisfactory evidence that John T. Patton, Jr. is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

Dated December 8, 2003
Signature of Notary Public Carol L. Culwell
Printed Name Carol L. Culwell
My appointment expires June 1, 2005

ASSIGNMENT

WHEREAS, I, **John L. Magnani**, having a mailing address of **12216 Triple Crown Road, Gaithersburg, Maryland 20878** (hereinafter referred to as ASSIGNOR), am a joint owner, along with GlycoTech Corporation of an invention entitled **"COMPOSITIONS AND METHODS FOR DIAGNOSIS AND THERAPY OF MEDICAL CONDITIONS INVOLVING ANGIOGENESIS"** as described and claimed in the specification for which an application for United States letters patent was filed on June 19, 2003, and assigned Application No. 10/601,080; and in the specification for which an International Application was filed on June 19, 2003 and assigned Application No. PCT/US03/19429; which applications claim the benefit of U.S. Provisional Application No. 60/393,577, filed on July 03, 2002;

WHEREAS, GlycoMimetics, Inc. (hereinafter referred to as ASSIGNEE), a corporation of the State of Delaware having a place of business at 14915 Broschart Road, Suite 200, Rockville, Maryland 20850 is desirous of acquiring ASSIGNOR'S entire right, title and interest in and to the invention and in and to any letters patent that may be granted therefor in the United States and in any and all foreign countries;

NOW, THEREFORE, in exchange for good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby sells, assigns and transfers unto said ASSIGNEE his entire right, title and interest in and to said invention, said application and any and all letters patent which may be granted for said invention in the United States of America and its territorial possessions and in any and all foreign countries, and in any and all divisions, reissues and continuations thereof, including the right to file foreign applications directly in the name of ASSIGNEE and to claim priority rights deriving from said United States application to which said foreign applications are entitled by virtue of international convention, treaty or otherwise, said invention, application and all letters patent on said invention to be held and enjoyed by ASSIGNEE and its successors and assigns for their use and benefit and of their successors and assigns as fully and entirely as the same would have been held and enjoyed by ASSIGNOR had this assignment, transfer and sale not been made. ASSIGNOR hereby authorizes and requests the Commissioner of Patents and Trademarks to issue all

letters patent on said invention to ASSIGNEE. ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of applications for United States and foreign letters patent on said invention, for litigation regarding said letters patent, or for the purpose of protecting title to said invention or letters patent therefor.

Dec. 9, 2003
Date
John L. Magnani
John L. Magnani

State of Massachusetts
County of Montgomery ss.

I certify that I know or have satisfactory evidence that John L. Magnani is the person who appeared before me, and said person acknowledged that he signed this instrument and acknowledged it to be his free and voluntary act for the uses and purposes mentioned in the instrument.

Dated December 9, 2003
Signature of Notary Public Carol L. Culwell
Printed Name Carol L. Culwell
My appointment expires June 1, 2005

3. Detailed Description of the Invention

The present invention relates to a method of crystallizing polyester powder.

The purpose of the present invention is to provide an improved method of crystallizing polyester powder.

When polyester is directly melted while still moist, the ester bonds hydrolyze and the degree of polymerization decreases, becoming a source of a considerable reduction in the quality of the product obtained by means of spinning or molding. Therefore, when polyester is melt-spun or melt-molded, this polyester is usually thoroughly heated in powder form prior to melting in order to eliminate the moisture content as much as possible. Moreover, the solid-phase polymerization method whereby polyester powder with a relatively low degree of polymerization is heated to raise the degree of polymerization is also widely employed.

Nevertheless, when the polyester powder is directly submitted to heating and drying or to solid-phase polymerization in these cases, aggregation of the particles occurs during heating, making trouble-free heating impossible. Therefore, a method is proposed whereby the polyester that is to be submitted to drying or solid-phase polymerization is pre-heated to the crystallization temperature or higher and then dried or polymerized in the solid phase.

Examples of conventional crystallization methods of this type include a method whereby polyester powder is placed on a fluid bed and crystallized as hot air flows through the powder, a method of crystallization by means of hot air in a rotary dryer, a method of crystallization by means of hot air while agitating in a crystallization tank with agitating blades, and the like.

However, there are problems with these methods of crystallization by means of hot air in that it is impossible to prevent aggregation of the powder particles during the crystallization process, and if crystallization treatment is not performed for a long time of 20 minutes or more, thorough crystallization does not occur, so energy costs are very high.

On the other hand, a method has also been proposed whereby crystallization treatment is performed with water or steam at 80 to 100°C (USP 836,742). However, problems occur with this method in that it takes a long time, 15 to 25 minutes, to crystallize polyester powder, and

because moist powder enters the drying and solid-phase polymerization zones, hydrolysis occurs during drying and solid-phase polymerization.

The inventors performed intense studies to solve these problems of prior art, and, as a result, they completed the present invention upon discovering that when crystallization treatment is performed using steam heated to 110°C or higher, the powder can be crystallized in a very short time, and the moisture content will not enter the drying or solid-phase polymerization zones.

That is, the present invention is a method of crystallizing polyester characterized in that polyester powder whose primary repeating units are alkylene terephthalate is crystallized by being treated with steam heated to 110°C or higher.

The polyester in the present invention is one whose primary repeating units are alkylene terephthalate, and polyester whose primary repeating units are ethylene terephthalate is particularly preferred. A third component may also be copolymerized at 10 mol% or less. Examples of such components include dibasic acids such as adipic acid, sebacic acid, isophthalic acid, 5-sodium sulfoisophthalate, and naphthalene dicarboxylic acid; oxy acids such as oxybenzoic acid; and glycols such as diethylene glycol, propylene glycol, neopentyl glycol, pentaerythritol, and polyethylene glycol. Another polymer may also be blended at 10 wt% or less. Moreover, delustering agents (such as titanium oxide), flame retardants, weathering agents, heat resistors, coloration stabilizers (such as phosphorus compounds), antistatic agents, fluorescent brighteners, and viscosity stabilizers (such as boron compounds) can be added to this polyester.

The polyester powder in the present invention means polyester in chip, pellet, flake, or powder form.

The steam that is used in the present invention must be steam that has been heated to 110°C or higher. Crystallization in a short amount of time is impossible when the temperature is lower than 110°C. Either saturated steam or superheated steam can be used as the hot steam. However, when saturated steam is used, there is the chance that moisture will remain in the

powder and hydrolysis will occur during the drying and solid-phase polymerization processes, so superheated steam is preferred.

A treatment time of 1 to 2 minutes with steam heated to 110°C, 10 seconds to 1 minute with steam heated to 130°, or 5 to 20 seconds with steam heated to 150°C is sufficient. Crystallization can be accomplished in a very short time when contrasted to the fact that crystallization with hot air requires a treatment time of 20 minutes or longer.

Thus, by means of the present invention, polyester powder can be crystallized in a very short time of no more than one-tenth the time of the prior art, and there is almost no aggregation of particles or no detrimental effect from the moisture content during the drying and solid-phase polymerization processes. Therefore, the present invention makes a very large contribution to reducing energy costs and improving treatment results.

The present invention will now be described in further detail with working examples.

Working Examples 1 through 3

Polyethylene terephthalate with a melting point of 260°C and a limiting viscosity $[\eta]$ of 0.64, obtained by means of a melt polymerization of dimethyl terephthalate and ethylene glycol, was extruded, quenched, and cut into cylindrical pellets with a diameter of 3 mm and length of 4 mm. These pellets were placed on a metal screen and crystallized by means of blowing steam heated to various temperatures from below the screen through the pellets. Next, the pellets were introduced to a vacuum rotary dryer shaped as a double cone and heated to 180°C. The pellets were heated and dried under reduced pressure as the temperature was raised from 180°C to 230°C over a period of 3 hours, and the dried pellets were polymerized in the solid phase. In this case, the treatment time with superheated steam was varied, and it was determined how long the pellets polymerized in the solid phase needed to be treated with hot steam before aggregation stopped. The results are shown in the following table.

| | Hot steam temperature (°C) | Treatment time (minutes) |
|-----------|----------------------------|--------------------------|
| Example 1 | 110 | 1 |
| Example 2 | 130 | 0.2 |
| Example 3 | 150 | 0.1 |

No aggregation at all was seen with the pellets after treatment with hot steam, and there were no problems associated with the moisture content during the drying or solid-phase polymerization processes.

Comparative Examples 1 and 2

By way of comparison, crystallization treatment was performed using steam heated to 150°C and saturated steam at 100°C in place of the steam heated to 110°C in Working Example 1. The experiment was repeated with the other conditions being the same as in Working Example 1, and it was determined how long the pellets polymerized in the solid phase had needed to be treated with hot steam before aggregation stopped. The results are shown in the following table.

| | Crystallization treatment conditions | Treatment time (minutes) | Comments |
|-----------------------|--------------------------------------|--------------------------|---|
| Comparative Example 1 | Hot air at 150°C | 20 | Some aggregation occurred after crystallization treatment |
| Comparative Example 2 | Saturated steam at 100°C | 15 | Hydrolysis was caused by the moisture content during the heating and drying process |

As is clear from these results, when crystallization treatment is performed using steam heated to 110°C, polyester powder can be crystallized in a very short time with no aggregation of the pellets during crystallization treatment or problems associated with the moisture content in the drying and solid-phase polymerization process.

Applicant: Teijin Co., Ltd.

Agent: Yoshihiro Maeda, Patent Attorney